UNDERGROUND RECONNAISSANCE SAFETY

Abandoned mines are inherently hazardous and must be treated as such by NPS staff. Many hazards are not obvious, and some cannot be detected without instruments. In most cases, there is no need to enter any of the abandoned mine workings; they are too dangerous.

> COAL MINES, VERTICAL OR NEAR VERTICAL OPENINGS WILL NOT BE ENTERED UNLESS SUBSTANTIAL JUSTIFICATION OVERRIDES SAFETY CONCERNS AND UNLESS PROPERLY TRAINED AND EQUIPPED.

Underground reconnaissance should be conducted only by properly trained and equipped personnel, and generally are necessary only where visitors are likely to enter the mine. Underground mines that are not entered for reconnaissance should be considered very hazardous and a high priority for closure.

In the event entry is necessary, the team should have available the safety equipment listed in Appendix A, Field Equipment.

REFERENCE

Loss Control Management Guideline, NPS-50, Chapter 30, Abandoned Mine Safety.

UNDERGROUND PROCEDURES FOR ADITS

1. The team will be trained and experienced in underground mine safety and health, including potential hazards, underground mine safety procedures, and the use of safety equipment. Health and safety equipment must be approved by the Mine Safety and Health Administration (MSHA).

2. Underground teams will consist of at least two people. If three or more people are present, one person will remain at the mine entrance. The underground crew will check in with this person at predetermined time intervals.

3. Underground teams must have a communication link with park officials and mine rescue teams. This link can be done effectively by radio to the park dispatcher.

4. Underground teams will enter with one person in front followed by the second person at a minimum distance of 50 ft.

5. Rock conditions will be checked with a scaling bar by a properly trained person. Entry will not continue if extensive barring of loose rock is required.

6. If multi-gas detector signals an alarm, or at the first sign of symptoms from bad air (i.e., headache, dizziness, slurred speech, nausea, etc.) in any team member, the symptoms will be announced to the team, and the mine will be evacuated by all personnel immediately.

7. Only when necessary, the team may work for reasonable periods of time in concentrations of airborne contaminants exceeding permissible levels if they are protected by appropriate respiratory equipment. At least one other person with backup equipment and rescue capability is required in the event of failure of the respiratory equipment.

8. Underground team members will maintain voice contact with each other at all times.

9. Underground teams will <u>not</u>:

   a. proceed through caved areas.

   b. proceed over rotten ladders or structures.

   c. enter shafts or other near vertical openings.

   d. disturb explosive materials.

> Record presence and description of explosive material on AML Inventory Data Sheet, and notify park superintendent, chief safety officer, and regional blasting officer to arrange for disposal.

10. Water courses and pools will be probed for depth with a bar or pole to determine whether it is safe to proceed through water.

11. Underground team will remain underground only long enough to complete the necessary work.

<u>HAZARD MITIGATION</u>

1. For immediate, short term mitigation, post warning signs of the abandoned mine. Refer to Tab VI for additional information on warning signs.

2. If hazards have been noted with a potential for injury, notify regional safety officer and recommend that any interpretative walks or other entry into mine workings be discontinued.

3. If explosive material is present, notify park superintendent, chief safety officer, and regional blasting officer to arrange for disposal.

SUMMARY OF HAZARDS

Shafts may be hidden or have loose rock and rotten timbers.

Explosives may be deteriorated and unstable.

Water may be contaminated, hide vertical shafts, conceal sharp rusty metal, or create a slipping hazard.

Dangerous substances may be left over from when the mine was active such as cyanide, ammonia, PCB's, asbestos insulation, etc.

Debris may be present such as broken glass, nails, sharp and rusted objects.

Cave-ins or cave-in potential may exist in that most mines were never meant to last more than a few years. Due to age, weathering, and rotten shoring, walls and roof are susceptible to collapse.

Bad air may exist including insufficient oxygen, poisonous, radioactive, and explosive gasses.

Animals may inhabit the mine workings including poisonous snakes, spiders, scorpions, rats, bears, mountain lions, wasps, bees, bats, skunks, javelina, ring tailed cats, coyotes, etc.

DANGER!

ABANDONED MINE HAZARDS

ROTTEN STRUCTURES

DEADLY MINE OPENINGS

LETHAL GAS &
LACK OF OXYGEN

DANGEROUS
ANIMALS

UNSAFE LADDERS

CAVE-INS & DECAYED
TIMBERS

UNSTABLE
EXPLOSIVES

DEEP POOLS OF WATER

STAY OUT

STAY ALIVE

DANGER!
¡PELIGRO!

ABANDONED MINE HAZARDS
PELIGROS DE MINAS ABANDONADAS

UNSAFE MINE SHAFTS & HIGHWALLS
POZOS DE MINAS PELIGROSOS

DEADLY GAS & LACK OF OXYGEN
GASES MORTALES Y FALTA DE OXIGENO

CAVE-INS & DECAYED TIMBERS
HUNDIMIENTOS Y MADERAS PODRIDAS

UNSAFE LADDERS
ESCALERAS PELIGROSAS

UNSTABLE EXPLOSIVES
EXPLOSIVOS INESTABLES

DEEP POOLS OF WATER
CHARCOS DE AGUA PROFUNDOS

ROTTEN STRUCTURES & EQUIPMENT
ESTRUCTURAS PODRIDAS Y EQUIPOS DAÑADOS

STAY OUT
NO ENTRE

STAY ALIVE
PROTEJA SU VIDA